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$$\frac{m}{pp'}=\frac{A.10^n+B}{(10^n-1)(10^n+1)}.$$

10^n-1 cannot be mult. p and mult. p', because the period would then have n digits, instead of $2n$.

Suppose 10^n+1 mult. p and mult. p', hence mult. pp' (supposing p, p' primes together). Writing $10^n+2=qpp'$, we have

$$mq=\frac{A.10^n+B}{10^n-1}=A+\frac{A+B}{10^n-1}.$$

But $A<10^n$, $B<10^n$. Then, $A+B=10^n-1$, and the property is true.

If 10^n+1=mult. p, and if p', divisor of 10^n-1, is 3 or 9, the sum $A+B$ is a number with similar digits.

Ex. $\frac{1}{21}=\frac{1}{7.3}=0,047619...$ $\quad$ $047+619=666$.

$\frac{1}{63}=\frac{1}{7.9}=0,015373...$ $\quad$ $015+373=888$.

Also solved by J. Scheffer.

H. C. Feemster should have received credit for solving 368.

GEOMETRY.

390. Proposed by PROF. R. C. ARCHIBALD, Brown University, Providence, R. I.

Find, geometrically, and without introducing focal properties, the locus of the vertices of the conjugate parallelograms of an ellipse.

Solution by the PROPOSER.

The solution which I had in mind when I proposed this problem was the following: By the elementary ideas of a *stretch* in projective geometry, if the radius of a circle, α, be b, and the stretch ratio be $\frac{a}{b}$ $(a>b$, say), α will be transformed into an ellipse with semi-axes of lengths a and b. Corresponding to any conjugate parallelogram of the ellipse will be a square circumscribing α; and since the locus of the vertices of all such squares is another circle concentric with α and of radius $\sqrt{(2)}b$, the stretch which transforms α into the ellipse with axes a and b will transform the concentric circle with radius $\sqrt{(2)}b$ into the ellipse with axes $\sqrt{(2)}a$, $\sqrt{(2)}b$. And this is the required locus, as found *analytically* by Mr. Scheffer (AMERICAN MATHEMATICAL MONTHLY, Vol. XIX, p. 54, March, 1912).